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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XB034

Takes of Marine Mammals Incidental to Specified Activities; Pile Placement for Fishermen's Offshore Wind Farm

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the Marine Mammal Protection Act (MMPA) implementing regulations, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to Fishermen's Atlantic City Windfarm, LLC (Fishermen's), allowing the take of small numbers of marine mammals, by Level B harassment only, incidental to pile driving off the New Jersey coast.

DATES: Effective May 1, 2013, through August 31, 2013

ADDRESSES: A copy of the IHA, the application, and the Environmental Assessment are available by writing to Michael Payne, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910 or by telephoning the contact listed here (see FOR FURTHER INFORMATION CONTACT), or visiting the Internet at:

<http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications>. Documents cited in this

notice may also be viewed, by appointment, during regular business hours, at the aforementioned address.

FOR FURTHER INFORMATION CONTACT: Michelle Magliocca, Office of Protected Resources, NMFS, (301) 427-8401.

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 et seq.) direct the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specific geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth. NMFS has defined "negligible impact" as "...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival."

Section 101(a)(5)(D) of the MMPA established an expedited process by which U.S. citizens can apply for an authorization to incidentally take small numbers of marine mammals by harassment. Section 101(a)(5)(D) further established a 45-day time limit for NMFS' review of

an application, followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of marine mammals. Within 45 days of the close of the comment period, NMFS must either issue or deny the authorization.

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].

Summary of Request

On August 30, 2011, NMFS received an application from AMEC Environment & Infrastructure, on behalf of Fishermen's, requesting an IHA for the take, by Level B harassment, of small numbers of bottlenose dolphins, harbor porpoises, and harbor seals incidental to pile driving activities off the New Jersey coast. In accordance with the MMPA and implementing regulations, NMFS issued a notice in the Federal Register on March 13, 2012 (77 FR 14736), requesting comments from the public on the proposed IHA.

Description of the Specified Activity

A complete description of the specified activity may be found in NMFS' proposed IHA notice in the Federal Register (77 FR 14736, March 13, 2012) and a summary is provided here. Fishermen's plans to construct a 20 megawatt offshore wind farm 4.5 kilometers (km) off the New Jersey coast. The long-term project would comprise a single row of six electric generating windmills. Pile driving is required to construct a jacketed foundation on the sea floor for each turbine, which will result in elevated sound levels.

Fishermen's will install 18 piles to create six jacketed foundations. Each foundation will consist of a three-legged structure, made up of three hollow steel pipes with an outer diameter of about 132 centimeters (cm). Each leg, or pipe, will be driven to a depth of about 46 meters (m) below the sea floor. The foundations will extend through the water column to about 14 m above mean higher high water, depending on tide levels. The top of each foundation will connect to the turbine with a transition piece, which will be welded to the foundation at about 93 m above mean higher high water.

Fishermen's will use a Delmag D-100 or equivalent hydraulic hammer to install the 18 piles. The hydraulic hammer and a lift crane will operate from a barge, which will be used to lift the foundation off a second barge and place it on the seafloor. Each pile will require 2,400-2,700 blows over 4-6 hours. The foundations' jacket structure and design are expected to lessen the amount and intensity of sound propagation.

Fishermen's will also install a submarine electric cable to transmit power from the turbines to the shore. The cable will make landfall at a point in Atlantic City and continue underground to the existing Huron Substation located along Absecon Avenue. Fishermen's will use jet plowing to install the submarine electric cables, which is a common burial method that minimizes environmental impacts to water quality and aquatic natural resources.

Date and Duration of Activity

Fishermen's plans to begin turbine installation and cable laying in the summer of 2013. Construction of the wind farm may take about 4 months, but pile driving activities will occur for a maximum of 24 days, during May and June. Pile driving will only occur in weather that provides adequate visibility for marine mammal monitoring activities.

Region of Activity

The activity will occur in state waters of New Jersey, about 4.5 km from Atlantic City, and the turbines will run roughly parallel to the coast in a single line. This location was chosen over alternative sites in New Jersey waters based on public support. Water depths at the proposed project location are 8 to 12 m at mean lower low water.

Sound Propagation

Sound is a mechanical disturbance consisting of minute vibrations that travel through a medium, such as air or water, and is generally characterized by several variables. Frequency describes the sound's pitch and is measured in hertz (Hz) or kilohertz (kHz), while sound level describes the sound's loudness and is measured in decibels (dB). Sound level increases or decreases exponentially with each dB of change. For example, 10 dB yields a sound level 10 times more intense than 1 dB, while a 20 dB level is 100 times more intense, and a 30 dB level is 1,000 times more intense. Sound levels are compared to a reference sound pressure (micro-Pascal) to identify the medium. For air and water, these reference pressures are “re: 20 μ Pa” and “re: 1 μ Pa,” respectively. Root mean square (RMS) is the quadratic mean sound pressure over the duration of an impulse. RMS is calculated by squaring all of the sound amplitudes, averaging the squares, and then taking the square root of the average (Urlick, 1975). RMS accounts for both positive and negative values; squaring the pressures makes all values positive so that they may be accounted for in the summation of pressure levels (Hastings and Popper, 2005). This measurement is often used in the context of discussing behavioral effects, in part because behavioral effects, which often result from auditory cues, may be better expressed through averaged units rather than peak pressures.

Based on sound measurements taken around impact hammers at other in-water locations, source levels during pile driving are estimated to reach about 195 dB RMS. Assuming a

practical spreading loss of 15 log R, Fishermen's estimates that the 180-dB (Level A harassment threshold) isopleth for the impact hammer will be about 107 m from the source. The 160-dB (Level B harassment threshold) isopleth will be about 2.6 km from the source. The amount of sound reduction afforded by the jacket structure and design is unknown. Noise associated with other construction activities (e.g., cable laying) is expected to be minimal.

Comments and Responses

A notice of receipt and request for public comment on the application and proposed authorization was published on March 13, 2012 (77 FR 14736). During the 30-day public comment period, the Marine Mammal Commission (Commission) provided the only comments.

Comment 1: The Commission recommends that NMFS require Fishermen's to recalculate the Level A and Level B harassment zones using the revised source level of 195 dB re 1 μ Pa at 10 m. This recommendation is based on further review of the ICF Jones & Stokes 2009 paper that Fishermen's used for their sound estimates.

Response: Fishermen's acknowledged that they used an incorrect source level and recalculated the Level A and Level B harassment zones using the revised source level of 195 dB. Corrections are addressed throughout this notice.

Comment 2: The Commission recommends that NMFS require Fishermen's to either (1) adjust the preliminary 1,000-m exclusion zone if the exclusion is intended to encompass the Level B harassment zone; or (2) require shut down of pile driving if any ESA-listed species approach or enter the revised Level B harassment zone.

Response: NMFS did not authorize the incidental take of any ESA-listed species. As indicated in the IHA, Fishermen's is required to shut down pile driving operation in order to prevent the unauthorized harassment of a marine mammal.

Comment 3: The Commission recommends that NMFS require Fishermen's to use the in-situ sound propagation measurements at 50 percent power to determine the distance to the Level B harassment threshold during power-down procedures.

Response: Fishermen's will use the in-situ sound propagation measurements at the beginning of pile driving to determine the distance to the Level B harassment threshold during power-down procedures.

Comment 4: The Commission recommends that NMFS require Fishermen's to clarify their monitoring strategy and explain how it will be sufficient for covering the entire Level B harassment zone.

Response: Fishermen's will have two vessel-based protected species observers positioned 600 m from the pile driving equipment, moving in a circular route around the sound source at about 10 knots. This will allow the observers to monitor the entire 1,000-m exclusion zone and also have sufficient view of the 107-m Level A harassment zone. Each observer will be responsible for monitoring a 180-degree field of vision.

Although the Level B harassment zone (2.6 km) will extend beyond the exclusion zone, the protected observers will still be able to monitor part of this area. Their observations will allow Fishermen's to estimate the total Level B harassment that occurs during pile driving.

Comment 5: The Commission recommends that NMFS ensure that mitigation measures can be implemented effectively and the number of takes can be recorded accurately.

Response: Fishermen's exclusion zone exceeds the Level A harassment zone by 893 m. This is a conservative distance that will minimize the chance of a marine mammal being exposed to sound levels at or above 180 dB. Furthermore, the 1,000-m exclusion zone lessens the area in which marine mammals could be exposed to sound levels at or above 160 dB. Protected species

observers will be on a separate vessel, able to maneuver around the sound source and cover a much larger area during pile driving operations. Observations of marine mammals will be used to estimate the total amount of take that occurs.

Comment 6: The Commission recommends that NMFS specify that the proposed number of pinniped takes may occur by in-water and in-air harassment when animals are near the sound source.

Response: Fishermen's 1,000-m exclusion zone will minimize the chances of marine mammals being exposed to sound that could cause Level A harassment. For whales and dolphins, NMFS considers this threshold to be 180 dB; and for pinnipeds (seals and sea lions), NMFS considers this threshold to be 190 dB. The 1,000-m exclusion zone extends beyond both of the Level A harassment zones. It is possible that harbor seals beyond the 1,000-m exclusion zone may be exposed to in-water and in-air sound levels considered to be Level B harassment. However, the take numbers that NMFS authorized are considered conservative in that they do not account for mitigation measures and are based on the maximum number of animals expected to occur within the project area – an area much larger than the 1,000-m exclusion zone isopleth. NMFS believes that any takes that may occur during Fishermen's pile driving operations will not exceed the amount authorized by the IHA.

Description of Marine Mammals in the Area of the Specified Activity

There are 42 marine mammal species with confirmed or potential occurrence off the coast of New Jersey. Of these, 20 species are regular inhabitants to the northeast Atlantic Ocean and could occur in the proposed project area at some point during the year. Information on species, status, and distribution was provided in the March 13, 2012 Federal Register notice (77 FR 14736).

Fishermen's project area was part of a large, comprehensive ecological baseline study of New Jersey's marine waters (NJDEP, 2010). From January 2008, through December 2009, the New Jersey Department of Environmental Protection surveyed 18,183 km of transects to collect baseline information on the distribution, abundance, and migratory patterns of coastal and marine species. Within Fishermen's project area (a 170-acre area encompassing the future wind turbine array), 611 km of study transects were dedicated to surveying for marine mammals and sea turtles. Marine mammal data were collected over the 2-year period using shipboard surveys, aerial surveys, and passive acoustic monitoring. Only bottlenose dolphins and a single unidentified seal were observed in the project area.

In January 2011, marine mammal observers were onboard the vessels conducting geophysical and geotechnical surveys of the project area. No marine mammal species were sighted during that time. Fishermen's also conducted pre-construction monitoring of the project area in order to fulfill a New Jersey Department of Environmental Protection requirement. This study was comprised of seven survey track lines, spaced about 2 km apart, and included a 2-km radius buffer zone around the proposed turbine locations. Fishermen's surveyed over 2,601 km of track lines for more than 140 survey hours between May 2010 and May 2011. During this study, observers sighted bottlenose dolphins, fin whales, humpback whales, minke whales, harbor porpoises, and harbor seals. Bottlenose dolphins were most commonly seen and only six mysticetes (baleen whales) were observed during the study. Sightings of fin whales, humpback whales, minke whales, and harbor porpoises were only observed between late September and mid-April. Based on sightings data, habitat preference, seasonality, and the proposed project timeline, marine mammal species other than bottlenose dolphins, harbor porpoises, and harbor seals are highly unlikely to be exposed to sound levels of 160 dB or higher and are not discussed

further. Detailed information on the species likely to be harassed during pile driving is provided below.

Bottlenose Dolphin

Bottlenose dolphins are found in a wide variety of habitats at both tropical and temperate latitudes. Depending on their habitat, they might feed on benthic fish, invertebrates, and pelagic or mesopelagic fish. They are often found in groups, most commonly of two to 15 individuals. NMFS currently recognizes 15 stocks of bottlenose dolphins in the Atlantic Ocean. Bottlenose dolphins in the proposed project area will likely be part of the western North Atlantic northern migratory coastal stock. The coastal stock is found along the inner continental shelf and around islands and often moves into or resides in bays, estuaries, and the lower reaches of rivers and has an estimated abundance of 9,604. There are insufficient data to determine the population trends for these stocks. Bottlenose dolphins are not listed under the Endangered Species Act (ESA), but the coastal stock is considered depleted under the MMPA. More information, including stock assessment reports, can be found at:

<http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/bottlenosedolphin.htm>. Bottlenose dolphins, like other dolphin species and most toothed whales, are in the mid-frequency hearing group, with an estimated functional hearing range of 150 Hz to 160 kHz (Southall et al., 2007).

Harbor Porpoises

Harbor porpoises reside in northern temperate and subarctic coastal and offshore waters. They are commonly found in bays, estuaries, harbors, and fjords less than 200 m deep. In the western North Atlantic, harbor porpoises range from west Greenland to Cape Hatteras, North Carolina. Harbor porpoises in U.S. waters are divided into 10 stocks, based on genetics, movement patterns, and management. During summer months, harbor porpoises are

concentrated in the northern Gulf of Maine and southern Bay of Fundy region. Any harbor porpoises encountered during the proposed project will be part of the Gulf of Maine-Bay of Fundy stock, which has an estimated abundance of 89,054 animals. Population trends for all U.S. stocks of harbor porpoises are currently unknown. Gulf of Maine-Bay of Fundy harbor porpoises are not listed under the ESA nor considered depleted under the MMPA. More information, including stock assessment reports, can be found at:

<http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/harborporpoise.htm>. Harbor porpoises are considered high-frequency cetaceans and their estimated auditory bandwidth (lower to upper frequency hearing cut-off) ranges from 200 Hz to 180 kHz (Southall *et al.*, 2007).

Harbor Seals

Harbor seals are typically found in temperate coastal habitats and use rocks, reefs, beaches, and drifting glacial ice as haul outs and pupping sites. On the east coast, they range from the Canadian Arctic to southern New England, New York, and occasionally the Carolinas. There are an estimated 91,000 harbor seals in the western North Atlantic stock and the population is increasing. There are three well known, long-term haul out sites in New Jersey: Sandy Hook, Barnegat Inlet, and Great Bay. However, the closest haul out (Great Bay) is about 21 km north of the project area. Harbor seal abundance at this site has increased since 1994 and shows strong seasonality, with seals consistently present between November and April (Slocum *et al.*, 1999; Slocum *et al.*, 2005). No other haul out sites were identified during aerial surveys for the ecological baseline study. Harbor seals are considered the most common seal species present in New Jersey waters, although gray seals, harp seals, and hooded seals, also appear in winter months. Harbor seals are not listed under the ESA nor considered depleted under the MMPA. More information, including stock assessment reports, can be found at:

<http://www.nmfs.noaa.gov/pr/species/mammals/pinnipeds/harborseal.htm>. Pinnipeds produce a wide range of social signals, most occurring at relatively low frequencies (Southall et al., 2007), suggesting that hearing is keenest at these frequencies. Pinnipeds communicate acoustically both on land and underwater, but have different hearing capabilities dependent upon the medium (air or water). Based on numerous studies, as summarized in Southall et al. (2007), pinnipeds are more sensitive to a broader range of sound frequencies underwater than in air. Underwater, pinnipeds can hear frequencies from 75 Hz to 75 kHz. In air, pinnipeds can hear frequencies from 75 Hz to 30 kHz (Southall et al., 2007).

Potential Effects on Marine Mammals

Elevated in-water sound levels from pile driving in the project area may temporarily change marine mammal behavior. Elevated in-air sound levels are not considered a concern because the nearest significant pinniped haul-out is 21 km away. However, it is possible that a harbor seal may be exposed to elevated in-air sound levels when it lifts its head out of the water. A detailed description of potential impacts to marine mammals can be found in the March 13, 2012 Federal Register notice (77 FR 14736) and is summarized here.

Marine mammals are continually exposed to many sources of sound. For example, lightning, rain, sub-sea earthquakes, and animals are natural sound sources throughout the marine environment. Marine mammals produce sounds in various contexts and use sound for various biological functions including, but not limited to, (1) social interactions; (2) foraging; (3) orientation; and (4) predator detection. Interference with producing or receiving these sounds may result in adverse impacts. Audible distance or received levels will depend on the sound source, ambient noise, and the sensitivity of the receptor (Richardson et al., 1995). Marine

mammal reactions to sound may depend on sound frequency, ambient sound, what the animal is doing, and the animal's distance from the sound source (Southall et al., 2007).

Hearing Impairment

Marine mammals may experience temporary or permanent hearing impairment when exposed to loud sounds. Hearing impairment is classified by temporary threshold shift (TTS) and permanent threshold shift (PTS). There are no empirical data for when PTS first occurs in marine mammals; therefore, it must be estimated from when TTS first occurs and from the rate of TTS growth with increasing exposure levels. PTS is likely if the animal's hearing threshold is reduced by ≥ 40 dB of TTS. PTS is considered auditory injury (Southall et al., 2007) and occurs in a specific frequency range and amount. Due to required mitigation measures and source levels in the project area, NMFS does not expect marine mammals to be exposed to sound levels associated with PTS.

Temporary Threshold Shift (TTS)

TTS is the mildest form of hearing impairment that can occur during exposure to a loud sound (Kryter, 1985). While experiencing TTS, the hearing threshold rises and a sound must be louder in order to be heard. TTS can last from minutes or hours to days, but is recoverable. TTS also occurs in specific frequency ranges; therefore, an animal might experience a temporary loss of hearing sensitivity only between the frequencies of 1 and 10 kHz, for example. The amount of change in hearing sensitivity is also variable and could be reduced by 6 dB or 30 dB, for example. Southall et al. (2007) considers a 6 dB TTS (i.e., baseline thresholds are elevated by 6 dB) to be a sufficient definition of TTS-onset. NMFS considers TTS as Level B harassment that is mediated by physiological effects on the auditory system; however, NMFS does not consider onset TTS to be the lowest level at which Level B harassment may occur.

A limited number of behavioral studies have been performed to assess the responses of mid-frequency cetaceans (such as bottlenose dolphins) to multiple pulses. Combined data show a range of behavioral responses, from temporary pauses in vocalization for received levels of 80 to 90 dB, to a lack of observable reactions for received levels of 120 to 180 dB (Southall, et al., 2007). Data on behavioral reactions of pinnipeds to multiple pulses is also limited, but suggests that exposures in the 150 to 180 dB range have limited potential to induce avoidance behavior (Southall et al., 2007). Some studies suggest that harbor porpoises may be more sensitive to sound than other odontocetes (Lucke et al., 2009 and Kastelein et al., 2011). Although TTS onset may occur in harbor porpoises at lower received levels (when compared to other odontocetes), NMFS' Level B harassment threshold is based on the onset of behavioral harassment, not TTS. However, the potential for TTS is considered in NMFS' analysis of potential impacts from Level B harassment.

Behavioral Effects

Behavioral responses to sound are highly variable and context-specific. An animal's perception of and response to (in both nature and magnitude) an acoustic event can be influenced by prior experience, perceived proximity, bearing of the sound, familiarity of the sound, etc. (Southall et al., 2007). If a marine mammal does react briefly to an underwater sound by changing its behavior or moving a small distance, the impacts of the change are unlikely to be significant to the individual, let alone the stock or populations. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on individuals and populations could be significant (e.g., Lusseau and Bejder, 2007; Weilgart, 2007). Given the many uncertainties in predicting the quantity and types of impacts of

noise on marine mammals, it is common practice to estimate how many mammals would be present within a particular distance of activities and/or exposed to a particular level of sound.

Impulse Sounds

The only sounds from the activity expected to result in the harassment of marine mammals are impulse sounds associated with impact pile driving. Southall et al. (2007) addresses behavioral responses of marine mammals to impulse sounds (like impact pile driving). The studies that address the responses of mid-frequency cetaceans to impulse sounds include data gathered both in the field and the laboratory and related to several different sound sources (of varying similarity to boomers), including: small explosives, airgun arrays, pulse sequences, and natural and artificial pulses. The data show no clear indication of increasing probability and severity of response with increasing received level. Behavioral responses seem to vary depending on species and stimuli. Data on behavioral responses of high-frequency cetaceans to multiple pulses is not available. Although individual elements of some non-pulse sources (such as pingers) could be considered pulses, it is believed that some mammalian auditory systems perceive them as non-pulse sounds (Southall et al., 2007).

The studies that address the responses of pinnipeds in water to impulse sounds include data gathered in the field and related to several different sources, including: small explosives, impact pile driving, and airgun arrays. Quantitative data on reactions of pinnipeds to impulse sounds is limited, but a general finding is that exposures in the 150 to 180 dB range generally have limited potential to induce avoidance behavior (Southall et al., 2007).

No impacts to marine mammal reproduction are anticipated because there are no known pinniped rookeries or cetacean breeding grounds within the proposed project area. Marine mammals may avoid the area around the hammer, thereby reducing their exposure to elevated

sound levels. NMFS expects any changes in marine mammal behavior to be temporary, Level B harassment (e.g., avoidance or alteration of behavior). Fishermen's conservatively assumes a maximum of 24 pile driving days may occur over the validity of the IHA. Marine mammal injury or mortality is not likely, as the 180 dB isopleth (NMFS' Level A harassment threshold for cetaceans) for the impact hammer is expected to be about a 100-m radius.

Anticipated Effects on Habitat

The installation of piles and submarine electric cable will cause temporary disturbance and limited, but permanent, loss of benthic habitat. These effects will be limited to the area within the project footprint and along the cable route where sediment-disturbing activities will occur. The cable installation process will temporarily affect benthic resources and habitat by entrainment of microorganisms and displacement or burial of other benthic resources. However, since the jetting and cable laying process occurs very slowly (less than 1 knot speed by the vessel), most mobile organisms are likely to avoid the area. Installation may result in a temporary loss of forage items and a temporary reduction in the amount of benthic habitat available for foraging marine mammals. However, there are no known foraging grounds around the project area, so marine mammals in the area will likely be traveling or foraging opportunistically. The cable route has been designed to avoid submerged aquatic vegetation. Impacts associated with cable installation and vessel anchoring will be temporary and localized.

Pile driving (resulting in temporary ensonification) may cause prey species and marine mammals to avoid or abandon the area; however, these impacts are expected to be local and temporary. Installation of the jacketed foundations and associated scour protection will result in the permanent loss of less than one acre of benthic habitat. However, this loss is not likely to have a measurable adverse impact on marine mammal foraging activity due to the limited size

and lack of known or significant foraging grounds in the proposed project area. The total impacted area represents less than one percent of similar bottom habitat in the proposed project area. Furthermore, the vertical foundation structure that will be added to the environment may provide additional habitat and foraging opportunities to marine species. The effects of habitat loss or modification to marine mammals are expected to be insignificant or discountable.

Mitigation Measures

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth, where applicable, the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable adverse impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses. There are no relevant subsistence uses of marine mammals implicated by this action. Fishermen's will be required to employ the following mitigation measures during pile driving operations:

Exclusion Zone

The purpose of Fishermen's exclusion zone is to prevent Level A harassment (injury) of any marine mammal species. Fishermen's will establish a radius around each pile driving site that will be continuously monitored for marine mammals. If a marine mammal is observed nearing or entering this perimeter, Fishermen's will reduce hammering power (or stop hammering) to reduce the sound pressure levels. More specifically, Fishermen's will establish a preliminary 1,000-m exclusion zone around each pile driving site, based on the estimated rates of sound attenuation discussed earlier in this notice. This distance will encompass the estimated 180-dB isopleth, within which injury could occur, plus an additional 893-m buffer. Fishermen's will perform field verification of the impact hammer's resulting sound pressure levels to ensure

that estimated distances to the 180-dB (Level A) and 160-dB (Level B) isopleths are accurate. Once hydroacoustic monitoring is conducted, the exclusion zone may be adjusted accordingly, with input from NMFS, so that marine mammals are not exposed to Level A harassment sound pressure levels.

The exclusion zone will be monitored continuously during impact pile driving to ensure that no marine mammals enter the area. If a marine mammal is nearing or enters the 1,000-m zone, hammering will be reduced to 50 percent capacity, which will reduce the distance to the 160 dB isopleth. If a marine mammal continues to move toward the 107-m Level A harassment zone, Fishermen's will stop all pile driving operations in order to prevent Level A harassment to marine mammals. Fishermen's initially proposed having a single protected species observer (PSO) to monitor the exclusion zone. However, following NMFS recommendation, Fishermen's will use two PSOs, each responsible for monitoring a 180-degree field of vision. The PSOs will be stationed aboard a dedicated support vessel that will patrol the exclusion zone throughout pile driving.

Pile Driving Shut Down and Delay Procedures

If a PSO sees a marine mammal within or approaching the exclusion zone (1,000 m) prior to start of impact pile driving, the observer will notify the construction manager (or other authorized individual) who will then be required to delay pile driving until the marine mammal leaves the exclusion zone or if the animal has not been resighted within 15/30 minutes (pinnipeds/cetaceans). If a marine mammal is sighted within or approaching the exclusion zone during pile driving, pile driving will be reduced to 50 percent capacity, which will reduce the size of the Level B harassment zones. The 107-m Level A harassment zone will be maintained throughout pile driving, regardless of power level. This conservative measure will ensure that

the area is clear of marine mammals prior to the hammer operating at full capacity. If an animal continues to approach the 107-m Level A harassment zone after pile driving is reduced to 50 percent capacity, then pile driving operations will be stopped until the animal has left the exclusion zone or 30 minutes have passed since the last sighting.

Soft-start Procedures

A “soft-start” technique will be used at the start of each pile installation to allow marine mammals that may be in the area to leave before the hammer reaches full energy. Soft starts require an initial set of three strikes from the impact hammer at 40 percent energy with a 1-minute waiting period between subsequent three-strike sets. If a marine mammal is observed within the exclusion zone prior to pile driving, or during the soft start, the construction manager (or other authorized individual) will delay pile driving until the animal has moved outside of the exclusion zone or 15/30 (pinnipeds/cetaceans) minutes have passed since the last sighting. Soft-start procedures will be conducted any time hammering stops for more than 30 minutes.

Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth “requirements pertaining to the monitoring and reporting of such taking”. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for IHAs must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present.

Fishermen’s will verify estimated sound levels to ensure that the Level A and Level B harassment zones are accurate. Fishermen’s will take sound measurements during the pile driving of the first three jacket foundations. As recommended by the Commission, in-situ

measurements will also be used to measure the Level B harassment zone when the pile hammer is at 50 percent capacity. Fishermen's will establish one reference location at a distance of 100 m from the sound source. They will take sound measurements from the reference location at two depths (one near the middle of the water column and one near the bottom of the water column). Two additional in-water measurements will be taken in two different directions of the pile driving site. Sound measurements will also be recorded 10 m from the sound source, as necessary, to determine the source level and affirm the distances to the Level B and Level A harassment zones. Fishermen's will integrate 90 percent of the energy window from each blow into their sound analysis when computing RMS sound pressure levels.

As explained in the Mitigation Measures section of this notice, there will be two PSOs monitoring the exclusion zone (1,000 m). PSOs will monitor the exclusion zone for at least 30 minutes prior to soft start, during pile driving, and for 30 minutes after pile driving is completed. PSOs will have the equipment needed to effectively monitor for marine mammals (for example, high-quality binoculars, compass, and range-finder), determine if animals have entered into the exclusion zone, and record species, behaviors, and responses to pile driving. Fishermen's will provide weekly status reports to NMFS that include a summary of the previous week's monitoring activities and an estimate of the number of marine mammals that may have been harassed as a result of pile driving. PSOs will submit a comprehensive report to NMFS within 90 days of completion of pile driving. The report will include data from marine mammal sightings (such as date, time, location, species, group size, and behavior), any observed reactions to construction, distance to operating pile hammer, and construction activities occurring at time of sighting and environmental data for the period (wind speed and direction, Beaufort sea state, cloud cover, and visibility).

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA (if issued), such as an injury (Level A harassment), serious injury, or mortality, Fishermen's will immediately cease the specified activities and report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and Michelle.Magliocca@noaa.gov and the Northeast Regional Stranding Coordinator (Mendy.Garron@noaa.gov). The report must include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Name and type of vessel involved;
- Vessel's speed during and leading up to the incident;
- Description of the incident;
- Status of all sound source use in the 24 hrs preceding the incident;
- Water depth;
- Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility);
- Description of all marine mammal observations in the 24 hrs preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

Activities will not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with Fishermen's to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Fishermen's may not resume their activities until notified by NMFS via letter, email, or telephone.

In the event that Fishermen's discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition as described in the next paragraph), Fishermen's will immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by email to Jolie.Harrison@noaa.gov and Michelle.Magliocca@noaa.gov and the Northeast Regional Stranding Coordinator at 978-281-9300 (Mendy.Garron@noaa.gov). The report must include the same information identified in the paragraph above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with Fishermen's to determine whether modifications in the activities are appropriate.

In the event that Fishermen's discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHA (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Fishermen's will report the incident within 24 hours of the discovery to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by email to Jolie.Harrison@noaa.gov and Michelle.Magliocca@noaa.gov and the NMFS Northeast Stranding Hotline (866-755-6622) and/or by email to the Northeast Regional Stranding Coordinator (Mendy.Garron@noaa.gov). Fishermen's will provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network. Activities may continue while NMFS reviews the circumstances of the incident.

Estimated Take by Incidental Harassment

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].

Current NMFS practice regarding exposure of marine mammals to anthropogenic noise is that in order to avoid the potential for injury (PTS), cetaceans and pinnipeds should not be exposed to impulsive sounds of 180 and 190 dB or above, respectively. This level is considered precautionary as it is likely that more intense sounds would be required before injury would actually occur (Southall et al., 2007). Potential for behavioral Level B harassment is considered to have occurred when marine mammals are exposed to in-water sounds at or above 160 dB for impulse sounds (such as impact pile driving) and 120 dB for non-pulse noise (such as vibratory pile driving).

Fishermen's calculated distances to NMFS' harassment thresholds are based on the expected source level of the impact hammer and the expected attenuation rate of sound. Fishermen's exclusion zone extends 893 m beyond the Level A harassment zone, which minimizes potential impacts to marine mammals from increased sound exposure. The difference between the exclusion zone (1,000 m) and the Level A harassment threshold (107 m) for cetaceans provides PSOs time and adequate visibility to prevent marine mammals from being exposed to injurious sound levels if an animal (e.g., a small dolphin or pinniped) enters the exclusion zone undetected.

Fishermen's estimated the number of marine mammals potentially taken by using their 2010-2011 pre-construction survey data as site-specific density estimates for the project area over a 1-year period. During that survey, Fishermen's observed 260 bottlenose dolphins, three humpback whales, two fin whales, one minke whale, two harbor seals, and five harbor porpoises. However, the survey was performed over a 1-year period, whereas pile driving will only take place between May and June. The only marine mammal species observed during May and June were bottlenose dolphins and an unidentified seal. Fishermen's considered the expected number of pile driving days and requested authorization for the Level B incidental take of five bottlenose dolphins. NMFS determined that this number does not adequately account for the likelihood that numerous animals went undetected during visual surveys. To account for this, NMFS multiplied species group size by the maximum number of pile driving days. More specifically, NMFS used the average group size of bottlenose dolphins observed between May and June during the pre-construction survey and multiplied this number by 24 (the maximum number of pile driving days). Because harbor porpoises were never observed during the months of May and June, NMFS conservatively used the maximum group size (two) of harbor porpoises observed during the entire pre-construction survey. NMFS also used the maximum group size (two) of harbor seals observed during the entire pre-construction survey. These calculations are illustrated below in Table 2.

Species	Group Size	Maximum Number of Pile Driving Days	Authorized Take ¹
Bottlenose dolphin	5 ²	24	120
Harbor porpoise	2 ³	24	48
Harbor seal	2 ³	24	48

Table 2. NMFS' method for calculating potential takes of marine mammals during Fishermen's pile driving operations.

¹Authorized take was calculated by multiplying group size and the maximum number of pile driving days.

²NMFS used the average group size of bottlenose dolphins observed during the pre-construction survey for the months of May and June (when pile driving will occur).

³NMFS conservatively used the maximum group size of harbor porpoises and harbor seals observed during the entire pre-construction survey.

NMFS is authorizing the take of 120 bottlenose dolphins, 48 harbor porpoises, and 48 harbor seals. The increase in proposed take is based on the likelihood that smaller animals may not have been detected during surveys, but may be present in the proposed project area during pile driving. These numbers are conservative in that they do not account for mitigation measures and are based on the maximum number of animals expected to occur within the project area – an area much larger than the 1,000-m exclusion zone isopleth. Pile driving operations will occur during months when other marine mammal species are unlikely to be in the area.

Negligible Impact and Small Numbers Analysis and Determination

NMFS has defined "negligible impact" as "...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival." In making a negligible impact determination, NMFS considers a number of factors which include the number of anticipated injuries or mortalities (none of which are authorized here), number, nature, intensity, and duration of Level B harassment, and the context in which takes occur.

As described above, marine mammals will not be exposed to activities or sound levels which will result in injury (PTS), serious injury, or mortality. The project area is not considered significant habitat for marine mammals and the closest significant pinniped haul out is 21 km away, which is well outside the project area's largest harassment zone. Marine mammals around the action area will likely be traveling or opportunistically foraging. The amount of take NMFS authorized is considered small (less than two percent of each species) relative to the estimated populations of 9,604 bottlenose dolphins, 89,054 harbor porpoises, and 91,000 harbor seals. Marine mammals may be temporarily impacted by pile driving noise. However, marine

mammals may avoid the area, thereby reducing exposure and impacts, and mitigation measures will minimize any behavioral harassment and reduce the risk of injury or mortality. Pile driving operations will occur for 15-24 days. NMFS does not expect any changes to annual rates of recruitment or survival of marine mammals exposed to elevated sound levels.

Based on analysis in this notice, the proposed IHA notice (77 FR 14736, March 13, 2012), and the application, and taking into consideration the implementation of mitigation and monitoring measures, pile driving operations may result in, at most, short-term modification of behavior by small numbers of marine mammals. Marine mammals may avoid the area or temporarily alter their behavior at time of exposure. NMFS has determined that Fishermen's pile driving operations will result in the incidental take of small numbers of marine mammals, by Level B harassment only, and that the total taking will have a negligible impact on the affected species or stocks.

Impact on Availability of Affected Species for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals implicated by this action.

Endangered Species Act (ESA)

NMFS has determined that pile driving operations during May and June will not impact species or critical habitat protected under the ESA. Therefore, consultation under section 7 is not required.

National Environmental Policy Act (NEPA)

In compliance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), as implemented by the regulations published by the Council on Environmental Quality (40 CFR parts 1500-1508), and NOAA Administrative Order 216-6, NMFS prepared an Environmental Assessment (EA) to consider the environmental impacts of issuing a 1-year IHA.

NMFS analysis resulted in finding of no significant impact (FONSI). The EA and FONSI are available on the NMFS website listed in the beginning of this document (see ADDRESSES).

Dated: June 27, 2012.

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